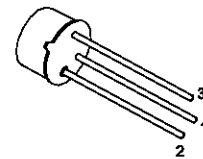


LOW NOISE GENERAL PURPOSE AUDIO AMPLIFIERS

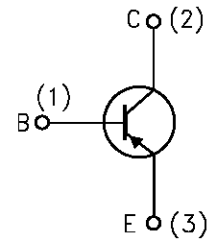
DESCRIPTION

The BC107 and BC108 are silicon planar epitaxial NPN transistors in TO-18 metal case. They are suitable for use in driver stages, low noise input stages and signal processing circuits of television receivers. The PNP complement for BC107 is BC177.



TO-18

INTERNAL SCHEMATIC DIAGRAM



SC08810

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BC107	BC108	
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	50	30	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	45	20	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	6	5	V
I_C	Collector Current	100		mA
P_{tot}	Total Dissipation at $T_{amb} \leq 25^\circ\text{C}$ at $T_{case} \leq 25^\circ\text{C}$	0.3		W
		0.75		W
T_{stg}	Storage Temperature	-55 to 175		$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	175		$^\circ\text{C}$

BC107/BC108

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-Case	Max	200	°C/W
R _{thj-amb}	Thermal Resistance Junction-Ambient	Max	500	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CBO}	Collector Cut-off Current (I _E = 0)	for BC107 V _{CB} = 40 V V _{CB} = 40 V T _{case} = 150 °C for BC108 V _{CB} = 20 V V _{CB} = 20 V T _{case} = 150 °C			15 15 15 15	nA μA μA μA
V _{(BR)CBO}	Collector-Base Breakdown Voltage (I _E = 0)	I _C = 10 μA for BC107 for BC108	50 30			V V
V _{(BR)CEO} *	Collector-Emitter Breakdown Voltage (I _B = 0)	I _C = 10 mA for BC107 for BC108	45 20			V V
V _{(BR)EBO}	Emitter-Base Breakdown Voltage (I _C = 0)	I _E = 10 μA for BC107 for BC108	6 5			V V
V _{CE(sat)} *	Collector-Emitter Saturation Voltage	I _C = 10 mA I _B = 0.5 mA I _C = 100 mA I _B = 5 mA		70 200	250 600	mV mV
V _{BE(sat)} *	Base-Emitter Saturation Voltage	I _C = 10 mA I _B = 0.5 mA I _C = 100 mA I _B = 5 mA		750 950		mV mV
V _{BE(on)} *	Base-Emitter On Voltage	I _C = 2 mA V _{CE} = 5 V I _C = 10 mA V _{CE} = 5 V	550	650 700	700 770	mV mV
h _{FE} *	DC Current Gain	I _C = 2 mA V _{CE} = 5 V for BC107 for BC107 Gr. A for BC107 Gr. B for BC108 for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C I _C = 10 μA V _{CE} = 5 V for BC107 for BC107 Gr. A for BC107 Gr. B for BC108 for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C	110 110 200 110 110 200 420 40 40 100	 120 90 150 120 90 150 270	450 220 450 800 220 450 800	
h _{fe} *	Small Signal Current Gain	I _C = 2 mA V _{CE} = 5 V f = 1 KHz for BC107 for BC107 Gr. A for BC107 Gr. B for BC108 for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C I _C = 10 mA V _{CE} = 10 V f = 100 MHz		250 190 300 370 190 300 500 2		

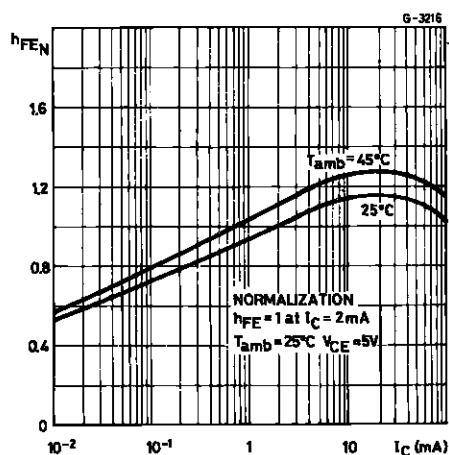
* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

ELECTRICAL CHARACTERISTICS (continued)

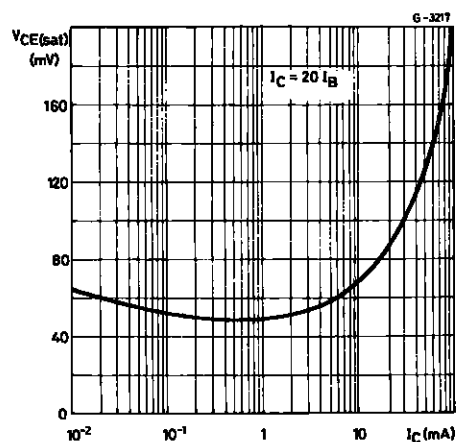
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
C_{CBO}	Collector Base Capacitance	$I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$		4	6	pF
C_{EBO}	Emitter Base Capacitance	$I_C = 0$ $V_{EB} = 0.5\text{ V}$ $f = 1\text{ MHz}$		12		pF
NF	Noise Figure	$I_C = 0.2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ $R_g = 2\text{ K}\Omega$ $B = 200\text{ Hz}$		2	10	dB
h_{ie}	Input Impedance	$I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ for BC107 for BC107 Gr. A for BC107 Gr. B for BC108 for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C		4 3 4.8 5.5 3 4.8 7		K Ω K Ω K Ω K Ω K Ω K Ω K Ω
h_{re}	Reverse Voltage Ratio	$I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ for BC107 for BC107 Gr. A for BC107 Gr. B for BC108 for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C		2.2 1.7 2.7 3.1 1.7 2.7 3.8		10^{-4} 10^{-4} 10^{-4} 10^{-4} 10^{-4} 10^{-4} 10^{-4}
h_{oe}	Output Admittance	$I_C = 2\text{ mA}$ $V_{CE} = 5\text{ V}$ $f = 1\text{ KHz}$ for BC107 for BC107 Gr. A for BC107 Gr. B for BC108 for BC108 Gr. A for BC108 Gr. B for BC108 Gr. C		30 13 26 30 13 26 34		μS μS μS μS μS μS μS

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 1\%$

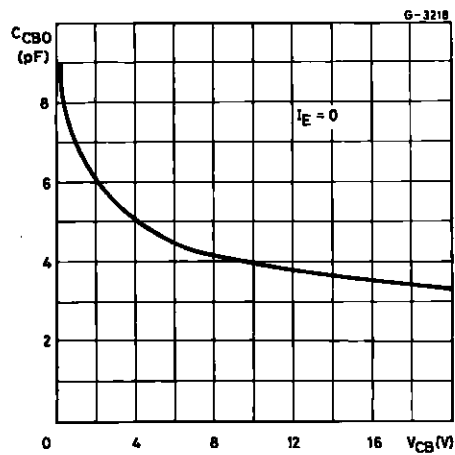
DC Normalized Current Gain.



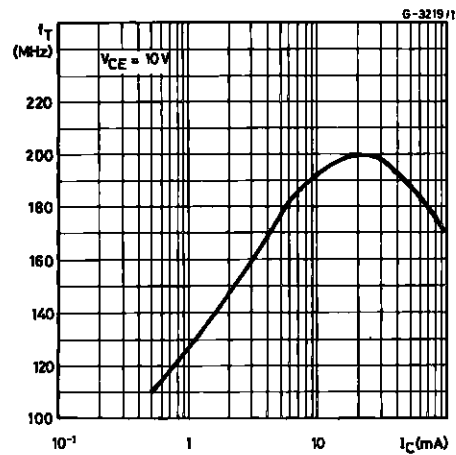
Collector--emitter Saturation Voltage.



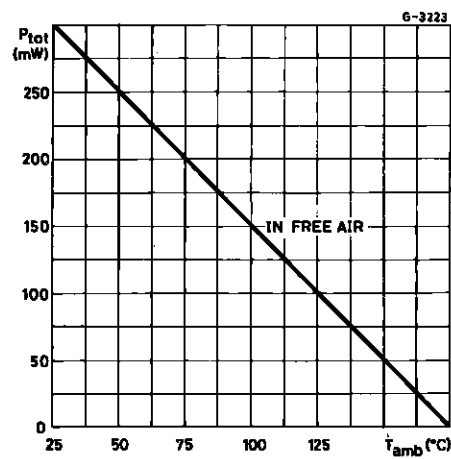
Collector-base Capacitance.



Transition Frequency.

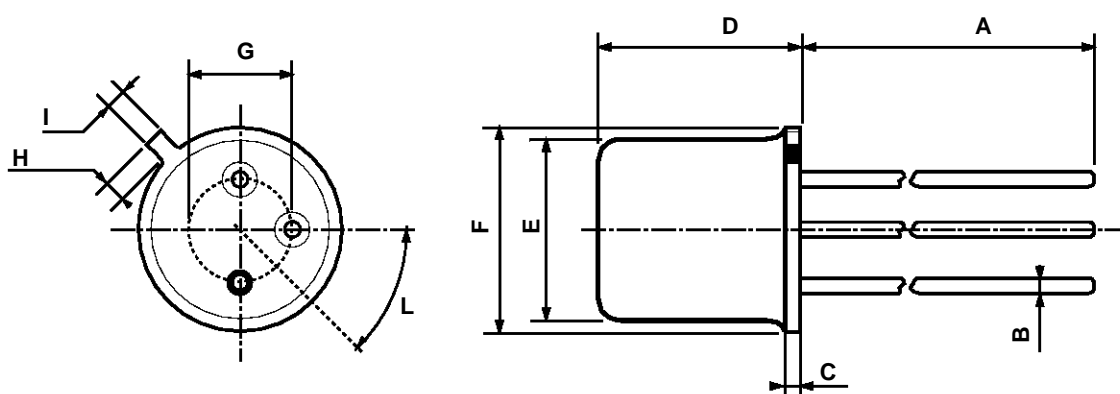


Power Rating Chart.



TO-18 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		12.7			0.500	
B			0.49			0.019
D			5.3			0.208
E			4.9			0.193
F			5.8			0.228
G	2.54			0.100		
H			1.2			0.047
I			1.16			0.045
L	45°			45°		



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